Appl. No.	:	10/652,587
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Applicant	:	Pratima Bajpai, et al.
Filed	:	August 29, 2003
Title	:	Eucalyptus Biokraft Pulping Process
TC/A.U.	:	1731
Examiner	:	Anna L. Kinney
Docket No.	:	016260-9005-US01
Customer No.		23510

I, Sandy Tabachnick, hereby certify that this correspondence is being deposited with the U.S. Postal Service as first class mail in an envelope addressed to Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on the date of my signature.

Sandy Tabachnick
Signature

April 14, 2006
Date of Signature

Mail Stop RCE
Commissioner for Patents
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SECOND DECLARATION OF MASOOD AKHTAR, UNDER 37 C.F.R. § 1.132

1. I am the Chief Executive Officer of Biopulping International, Inc. (hereinafter, "Biopulping International"), located at 2912 Syene Rd., Wisconsin, a position I have held since June 2000. Prior to that, I was Vice President of Research and Development at Biopulping International from November 1996 to May 2000, and a Microbiologist and Project leader at the Institute for Microbial and Biochemical Technology, U.S.D.A. - Forest Service, Forest Products Laboratory, Madison, Wisconsin from 1989 to 1996.

2. I received a Bachelor of Science Degree in Botany, Zoology, and Chemistry from Rohilkand University in India in 1978. I received a Doctorate degree in Microbiology (Botany) from Aligarh Muslim University in India in 1985. I have worked in the field of Biotechnology, specializing in exploring uses of microrganisms in the paper industry since at least as early as 1989. I am a member of the Technical Association of the Pulp and Paper Industry, and have served on the national and international committees dealing with biotechnology in the pulp and paper industry. Attached hereto, as Exhibit A, is a copy of my *curriculum vitae*.

3. I have received the following honors: 1998 Federal Laboratory Consortium Award, 1998 U.S. Forest Service Chief's Award for excellence in biopulping technology transfer, 1997 USDA Honor Award for developing biopulping technology, 1997 from the U.S. Secretary of Agriculture.

4. I am the co-inventor of the claimed subject matter of the above-identified patent application. I make this declaration in support of prosecution of the application before the U.S. Patent and Trademark Office.

5. In the methods of the present invention, eucalyptus wood chips are inoculated with white rot fungi and are allowed to ferment, so as to cause propagation of the fungus through the wood chips and obtain chemically modified lignin. The biotreated eucalyptus wood chips are then pulped by a known kraft process.

6. While a certain amount is known about the interaction of lignin and cellulose in wood fibers, because of the extreme complexity of the relationships, and the variation in the enzymes produced by varieties of the white-rot fungi, it is not readily possible to predict from the action of a given fungus on a given type of wood whether or not the paper made from wood partially digested with such fungus will have desirable qualities or not. The selection of white-rot fungi for biopulping applications on the basis of selective lignin degradation may seem a rational one, but it has proven to be a poor predictor of the quality of the resultant paper. The exact relationship between the degradation of lignin, and the resulting desirable qualities of paper produced at the end of the pulping process, are not at all clear. Accordingly, given present standards of technology and the present understanding of the complex interaction of lignin and cellulose, it is only possible to determine empirically the quality of paper produced through a given biological pulping process and the amount of any energy savings achieved through such a process.

7. None of the cited prior art references contain any empirical teaching as to the use of eucalyptus wood in a biokraft process to make a paper pulp. None of the cited prior art references even mention the possible use of eucalyptus in biopulping procedures.

8. As discussed in paragraph 6, as the nature of the white rot fungus-lignin relationship is not predictable, the teaching of biopulping methods utilizing white rot fungus with non-eucalyptus wood, would not suggest to one skilled in the art that the same methods and fungus species would necessarily be useful in the biopulping of a different species of wood.

9. Using similar methods of the present invention, I performed a biokraft pulping process on loblolly pine chips. The chips were then treated with *Phanerochaete chrysosporium* and incubated for two weeks. The preparation conditions were the same, apart from the active alkali content, from the conditions used in the treatment of eucalyptus wood as set forth in table 13 of the present specification (see pp. 46-47). The effectiveness of fungal pretreatment was evaluated based on yield and physical properties of the resulting paper after cooking. The physical properties of pulps were measured following the TAPPI standard methods. Results on pulp yield and the physical properties of the paper made with and without fungal pretreatments are shown in Table 13 (see Exhibit D). In each experiment set up I tried to compare the advantage of using fungus-treated chips over the non-treated control chips in kraft pulping processes. The preliminary results showed no apparent advantage of using fungus-treated chips over the control chips in terms of pulp yield and physical properties. I found no significant difference in the properties of the pulp produced from control chips and fungus-treated chips cooked under identical conditions.

10. Using similar methods of the present invention, I performed a biokraft pulping process on aspen wood chips. The chips were then treated with *Phanerochaete chrysosporium* and incubated for two weeks. The preparation conditions were the same, apart from the active alkali content, from the conditions used in the treatment of eucalyptus wood as set forth in table 13 of the present specification (see pp. 46-47). The effectiveness of fungal pretreatment was evaluated based on yield and physical properties of the resulting paper after cooking. The physical properties of pulps were measured following the TAPPI standard methods. Results on pulp yield and the physical properties of the paper made with and without fungal pretreatments are shown in Table 13 (see Exhibit E). In each

experiment set up I tried to compare the advantage of using fungus-treated chips over the non-treated control chips in kraft pulping processes. The preliminary results showed no apparent advantage of using fungus-treated chips over the control chips in terms of pulp yield and physical properties. I found no significant difference in the properties of the pulp produced from control chips and fungus-treated chips cooked under identical conditions.

11. Based on the biokraft pulping experiments on loblolly pine and aspen, it was expected that the biokraft pulping of eucalyptus would produce similar results (i.e., no significant difference between the properties of the pulp produced from the control chips and the fungus-treated chips), however, when the method of the present invention is utilized with eucalyptus wood chips, unexpected results are achieved. The biokraft pulping method used with eucalyptus wood results in improved chemical pulping efficiency and pulp properties (brightness and strength). An experiment as set forth in Example 1 of the specification was performed using the white rot fungus species *Phanerochaete chrysosporium* (see pp. 13-15 of the specification). A biokraft eucalyptus pulp is compared to that of a control which was not treated by *Phanerochaete chrysosporium.* The unbleached brightness and the final brightness of the biokraft eucalyptus pulp is higher than that of the control pulp (see Table 13(a) on page 46). Additionally, the strength properties of the treated eucalyptus chips are greatly improved (see Table 13(b) on page 47 of the Specification). Furthermore, the beating time of the kraft process utilizing biotreated eucalyptus wood is reduced by 33%. Such remarkable results have not been cited or suggested in the prior art with any other wood species tested.

12. The Office Action states that "It would have been obvious to the routineer to use the hardwood eucalyptus of Yang when making the Kraft pulp of Baecker." (Office Action p. 3). I disagree with this statement for two reasons. First, the references do not disclose or suggest that any methods of biokraft pulping could successfully be practiced with eucalyptus wood. Second, my own experiments conducted as outlined in paragraphs 10-11 above, found that the biokraft pulping of loblolly pine and aspen did not produce biokraft pulp with any significant difference in paper strength over standard kraft pulped

loblolly pine and aspen. Given this knowledge, I do not believe even given the teachings of the cited references, one would have found it obvious to utilize eucalyptus in biokraft pulping methods with a reasonable expectation of success, namely the production of high quality pulp.

13. In summary, for reasons provided in paragraphs 5-12 above, I believe that none of the references cited in the Office Action, whether considered individually or in combination with one another, teach or suggest the methods of the present invention. I also believe that the results of the experiments illustrated in the present application and discussed above demonstrate that paper produced using the methods of the present invention have surprisingly superior properties, for reasons provided above.

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements and the like so made are punishable by fine or imprisonment or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Date: ____April 14, 2006_____

_/Masood Akhtar/_____
Masood Akhtar, Ph.D.

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EXHIBIT A

Masood Akhtar

Center for Technology Transfer, 2809 Fish Hatchery Road, Madison, WI-53713
Phone: (608)-661-4081; Fax: (608)-441-6996; Email: makhtar@cttinc.org

Masood Akhtar is President of the Center for Technology Transfer Inc. (CTT) in Madison, Wis. An entrepreneur with experience in technology transfer, Akhtar founded CTT in June 2002 to improve the competitiveness of Wisconsin businesses by accelerating the adoption of energy efficient and environmentally-friendly technologies. The private, nonprofit corporation is funded by Focus on Energy, Wisconsin's energy efficiency and renewable energy initiative.

Masood Akhtar also is Chief Executive Officer of BioPulping International, a University of Wisconsin spin-off, in Madison. He co-founded the company in 1996 to commercialize biopulping after serving as biopulping project leader at the University of Wisconsin Biotechnology Center/Forest Products Laboratory for 10 years. Biopulping is the treatment of wood chips with a "natural" wood decay prior to pulping. It reduces electricity consumption by at least 30 percent, improves paper strength, reduces the environmental impact of pulping and reduces operating costs by at least $5 million per year for an average paper plant.

Professional Qualifications

Adjunct Professor	Department of Paper, Printing Science & Engineering, Western Michigan University, Kalamazoo, MI
Post-doctoral fellow	Plant Pathology, Ohio State University, 1986
Ph.D.	Microbiology (Botany), Aligarh Muslim University, India, 1985
M.Phil.	Microbiology (Botany), Aligarh Muslim University, India, 1982
M.S.	Botany Department, Aligarh Muslim University, India, 1980
B.S.	Botany, Chemistry and Zoology; Rohilkhand University; India, 1978

Area of Expertise.

Strategic planning, Management, Technology Transfer, Grant Writing, and Entrepreneurship.

Positions Held

President	Center for Technology Transfer, Inc. Madison, WI, 2002-to date
CEO	BioPulping International, Madison, WI., 2000-to-date
Vice-President	BioPulping International, Madison, WI, 1996-2000
Project Leader	Biopulping Consortium, Institute for Microbial and Biochemical Technology, Forest Products Laboratory, Madison, WI, 1989-1996.

Honors and Awards

On the program committee of the Ninth International Conference on Biotechnology in the Pulp and Paper Industry, Durban, South Africa, 2004; In 2003, elected as a Fellow by the International Academy of Wood Science, UK; 2001 Wisconsin Small Business Innovation Award for Outstanding Achievements by the Wisconsin small Business Innovation Consortium; On the program committee of the Eighth International Conference on Biotechnology in the Pulp and Paper Industry, Helsinki, Finland, June, 2001; Best Poster Award for 1999. ACEEE Summer Study on Energy Efficiency in Industry; On the organizing committee of the 6th Brazilian symposium on the chemistry of lignins and other wood components, October 25-28, 1999 Guaratingueta, SP, Brazil; U.S. Forest Service Chief's award for 1998 for excellence in BioPulping technology transfer; On the organizing Committee of the Seventh International Conference on Biotechnology in the Pulp and Paper Industry, Canada, June 1998; Federal Laboratory Consortium Award for 1998 for excellence in BioPulping technology transfer; On the Program Committee of the Seventh International Conference on Biotechnology in the Pulp and Paper Industry, Vancouver June, 1998; USDA Honor Award, for 1997 for developing biopulping technology, Awarded by the U.S. Secretary of Agriculture in Washington, DC; Awarded a certificate by the University of Wisconsin Biotechnology Centre, Madison, Wisconsin on March 24, 1997 for an outstanding contribution in bringing basic research on biopulping to the practical application; Tappi Pulping Conference High Impact Paper Award, 3rd place, 1996; Asked by the American Chemical Society to organize a symposium on Environmentally Benign Pulping Methods, New Orleans, LA, March 1996; On the organizing Committee of the Sixth International Conference on Biotechnology in the Pulp and Paper Industry, Vienna, Austria, June, 1995.

Patents.

Blanchette, R.A., G.F. Leatham, M.C. Attridge, M. Akhtar, and G.C. Myers. 1991. Biomechanical pulping with *C. subvermispora* (U.S Patent no. 5,055159)

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Akhtar, M. Method of enhancing biopulping efficacy. Patent allowed in South Africa.

Akhtar, M. Method of enhancing biopulping efficacy. A worldwide patent allowed.

Akhtar, M. Method of enhancing biopulping efficacy (US patent no.5,750,005)-May12, 1998.

Akhtar, M., M.J. Lentz, E.N. Lightfoot, G.M. Scott, Ross Swaney, and T.K. Kirk. Method and apparatus for commercial scale biopulping (A U.S. patent filed, March 1997).

Akhtar, M., M.J. Lentz, E.N. Lightfoot, G.M. Scott, Ross Swaney, and T.K. Kirk. Method and apparatus for commercial scale biopulping. A patent allowed in South Africa.

Akhtar, M., M.J. Lentz, G.M. Scott, R. E. Swaney, E. G. Horn, E.N. Lightfoot and T.K. Kirk. Method and apparatus for commercial scale biopulping (A worldwide patent filed, March 1998).

Akhtar, M., G.M. Scott, A. Ahmad, M.J. Lentz and E. G. Horn. Biopulping industrial wood waste (A US patent filed, December 1997).

Bajpai, P., Bajpai, K. P., and Akhtar, M. Eucalyptus bio-kraft pulping process (A worldwide patent application filed, March 1998). This patent, if granted will be owned jointly by BPI and The Thapar Research Group in India.

Swaney R.E., Akhtar, M., and Lentz, M.J. Fungal incubation containment system and methods (a provisional patent application filed June 2000 and PCT application filed June 2001).

Akhtar, M., Swaney, R.E. Horn E. G., Lentz, M. J., Scott, G.M., Black, C.R., Houtman, C. J., and Kirk, T.K. Wood chip modification with acids for pulping (worldwide patent filed March 20, 2002).

Akhtar, M., Horn, E.G., Lentz, M.J., and Swaney, R.E., Eucalyptus biomechanical pulping process (a worldwide patent application filed June 1, 2002).

Akhtar, M., Lentz, M.A., Horn, E.G., Klungness, J.H., and Scott, C.T. Microwaving of logs: An innovative method of reducing energy consumption and improving paper properties during mechanical pulping (Worldwide patent filed November 9 2002).

Book.

Environmentally Friendly Technologies for the Pulp and Paper Industry (R.A. Young and M. Akhtar, eds.), John Wiley & Sons, Inc., New York, 1998. Book chapters: 7

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R.A. Young, P. Bustamante, P., J. Ramos, V. Zuniga, H. Sabharwal, and M. Akhtar (1998).Biomechanical pulping of kenaf and other agro-based materials. In: Chemistry of kenaf: Properties and Materials (T. Sellers ed.), Mississippi State University.

M. Akhtar, G. Scott, M.J. Lentz, R.E Swaney, and T.K. Kirk (1998). Overview of biomechanical and biochemical pulping research. Enzyme Applications in Fiber Processing (K.-E. Eriksson and A. Cavaco-Paulo eds.), American Chemical Society Symposium Series 687, Washington, D.C. pp. 15-26.

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Selected Publications.

G.M. Scott , M. Akhtar , R.E. Swaney , and C.J. Houtman. Recent developments in biopulping technology, Proceedings of the 8th international Conference on Biotechnology in the Pulp and Paper Industry, June 4-8, 2001, Helsinki, Finland.

G. M. Scott , Masood Akhtar ,Gary C. Myers , Marguerite S. Sykes , Ross E. Swaney. An update on biopulping commercialization. Proceedings of the 3rd Ecopapertech Conference, June 4-8, 2001, Helsinki, Finland, pp. 37-43.

M. Akhtar, M. Saiika-aho and L. Viikari (1999). An overview of biopulping and biobleaching. Proceedings of the 6th Brazilian symposium on the chemistry of lignins and other wood components, October 25-28, Guaratingueta, SP, Brazil.

M. Akhtar, G.M. Scott, R.E. Swaney, M.J. Lentz, E.G. Horn, M.S. Sykes, and G.C. Myers (1999). Commercialization of biopulping technology for mechanical pulping. Proceedings of the TAPPI/China International conference, November 9-10.

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M. Akhtar, E.G. Horn, M.J. Lentz, G.M. Scott, M.S. Sykes, T.K. Kirk, and R.E. Swaney (1999). Toward commercialization of biopulping. PaperAge, February issue, pp. 17-20.

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B.J. H. Janse, J. Gaskell, M. Akhtar and D. Cullen (1998). Expression *of Phanerochaete chrysosporium* genes encoding lignin peroxidase, manganese peroxidase and glyoxal oxidase in wood. Appl. Environ. Biol. 64 (9): 3536-3538.

C.J. Behrendt, R.A. Blanchette, M. Akhtar, S. Enebak, S. Iverson, and D. Williams. Pine logs pretreated with *Phlebia gigantea* reduced energy consumption and increased paper strength properties during biomechanical pulping processes. Tappi J. (submitted for publication).

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K. Fischer, M. Akhtar, K. Messner, T. Kent Kirk, and R.A. Blanchette (1996). Pitch reduction with the white-rot fungus *Ceriporiopsis subvermispora*. Biotechnology in the pulp and paper industry: Recent advances in applied and fundamental research, Facultas-Universitätsverlag, Berggasse 5, A-1090 Wien, Austria, pp. 193-197.

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T.K. Kirk, M. Akhtar, and R.A. Blanchette (1994). Biopulping: Seven years of consortia research. 1994 TAPPI Biological Sciences Symposium, Tappi Press, pp. 57-66, Atlanta, GA.

H.S. Sabharwal, M. Akhtar, R.A. Blanchette, and R.A. Young (1994). Bio-refiner mechanical pulping of bast type fibers. 1994 Tappi Pulping Conference, TAPPI Press, pp. 623-641 San Diego, CA.

H.S. Sabharwal, M. Akhtar, R.A. Blanchette, and R.A. Young (1994). Biomechanical pulping of bast fibers. Tappi J. 77: 105-112.

R.A. Young, S. Sabharwal, M. Akhtar, and R.A. Blanchette (1994). Biomechanical pulping of non-wood species. Non-wood fibers for industry. Conference proceedings Vol. II-24 March, Pira International/Silsoe Research Institute Joint Conference, England, paper # 17 pp. 1-4.

M. Akhtar (1994). Biomechanical pulping of aspen wood chips with three strains of *Ceriporiopsis subvermispora*. Holzforschung 48: 199-202.

K. Fischer, M. Akhtar, R. A., Blanchette, Todd A. Burness, Kurt Messner, and T. K. Kirk (1994) . Reduction of resin content in wood chips during experimental biological pulping processes. Holzforschung 48: 285-290.

M. Akhtar, M.C. Attridge, G.C. Myers, and R.A. Blanchette (1993). Biomechanical pulping of loblolly pine chips with selected white-rot fungi. Holzforschung 47: 36-40.

Kirk, T.K., J.W. Koning Jr., R.R. Burgess, M. Akhtar, R. A. Blanchette, D.C. Cameron, D. Cullen, P.J. Kersten, E.N. Lightfoot, G.C. Myers, M. Sykes, and M.B. Wall (1993). Biopulping: A Glimpse of the Future? Res. Rep. FPL-RP-523, Madison, Wisconsin, pp. 74

Scientific Presentations

About 70 papers presented before national and international scientific societies, technical conferences etc.

Funds

Pulp and paper and related industry $375,000; University of Wisconsin $ 82,552; United States Department of Agriculture Competitive Grant $ 155,817; Energy Center of Wisconsin $ 230,000; Energy Center of Wisconsin $ 127,459; Clariant (Sandoz) Corporation $50,000; Cooperative Research and Development Program $ 66,000; UPM-Kymmene, Finland $7,500; Recycling Market Development Board, Department of Commerce, $10,000; Small Business Innovation Grant/USDA (Phase 1)-$70,000; United States Department of Agriculture Competitive Grant, $81, 820; Wisconsin Department of Commerce-$196,500; US Department of Energy (Inventions and innovation Program), $200,000; Biopulping International, Inc.'s contract (RFP) with MSOE-$300,000; US Department of Energy (National Industrial Competitiveness through Energy, environment and Economics Program), $525,000; Small Business Innovation Grant/USDA (Phase 2)-$295,619; Focus on Energy to establish the Center for Technology transfer (CTT) $300,000 (July 1 2002-June 30, 2003) and approximately $4.5 million (July 1 2003-June 30, 2005) plus additional $3 million leverage with Impact Seven, another non-profit organization in Wisconsin.

Media Interviews

Wisconsin Public Radio (April 19, 2004), Fond du Lac Radio (March 23, 2004), and Milwaukee Public Radio (March 17, 2004) interviews on Center for Technology Transfer; Wisconsin State Journal, May 21, 2002, Will white-rot fungus save paper industry?' The Capital Times. February 6-7, 1999, Wisconsin Ideas; Printprocess (German publication), June 1999, Munching fungi; Agricultural Facts, National Public Radio, August 18, 1998, September 4, 1998; Resource Recovery Report, 5313 38th St. NW, Washington, DC, Paper, Vol. XXII No. 6, April 1998, p. 9; Chemical & Engineering News, American Chemical Society, New age paper and textile, March 23, 1998, vol. 76, No. 12, 39-47; Energy Efficiency Newsletter, The Energy Center of Wisconsin, Fall 1997, Vol. 2, Number 4, Biopulping is excellent; Wisconsin State Journal, August 28, 1997. Fungus helps to pulp wood; Wisconsin Channel 27, News item, Sunday, August 3, 1997, Biopulping; Isthmus, Vol. 22, No. 25 June 20-25, 1997. A dirty business. Should the paper industry be doing more to clean up its act? p. 9; PAPERA, Vol. 1, Nov. 2, June 1997, Biopulping: A new pulping technology. Institute of Paper Science and Technology; Renewal Energy Annual 1996. Published by the Energy Information Administration (EIA), U.S. Department of Energy, Washington, D.C. in March 1997. Biopulping: New biomass technology on the industrial horizon;The Forestry Source published by the Society of American Foresters, November Issue, 1996, p. 10, Researchers discover fungus that could save papermakers millions Wisconsin Channel 27, News Item, Tuesday, October 31, 1996, Biopulping; The Capital Times, October 16, 1996, Pulp friction Wisconsin Channel 27, News item, Friday, September 27, 1996, Biopulping; Milwaukee Journal Sentinel, September 26, 1996, Fungus could save papermakers millions; Wisconsin Public Radio, September 10, 1996, biopulping; Energy Efficiency Newsletter, The Energy Center of Wisconsin, Summer 1996, Vol. 1, Number 3, Fungus Invades Wisconsin paper mill; Channel 15, New Item, Tuesday, November 29, 1994; New Uses Council Ag Industrial Materials & Products, March 1994, New-biopulping method could enhance potential of paper making from kenaf, a non-wood plant; Wisconsin Channel 27, News item, Wednesday, November 24, 1993, Biopulping State of Wisconsin, Department of Natural Resources, Monday, Nov. 8, 1993; USDA TV News item (Washington, D.C.), August 1993, Biopulping; Wisconsin State Journal, Monday, April 12, 1993, Researchers pitch "biopulping"

EXHIBIT D

SUPPLEMENT TO TABLE 13

Biokraft pulping of loblolly pine wood chips with *Phanerochaete chrysosporium*

a. Pulp properties

Parameter	AA charge (%) 18% Control	18% Treated
P. No.	120	125
Unbleached brightness (% PV)	32.5	30.9
Unbleached pulp yield	65.0	65.9

No Pulp Bleaching Data Available

b. Strength properties

Parameter	Unbleached pulp data 18% AA Control	18% AA Treated
Wetness (°SR)	N.A.	N.A.
Tensile Index (N m/g)	39.3	37.9
Breaking Length (m)	3996	3850
Burst index (kN/g)	2.45	2.34
Tear index (mN m^2/g)	12.5	10.9
Double fold (No.)	N.A.	N.A.

Treatment of loblolly pine with *Phanerochaete chrysosporium* at 39°C for 2-weeks, Inoculum level, 5 g/T wood. Cooking of both control and treated at 18% AA. Experiments performed 12/15/92.

EXHIBIT E

SUPPLEMENT TO TABLE 13

Biokraft pulping of aspen wood chips with *Phanerochaete chrysosporium*

a. Pulp properties

Parameter	AA charge (%) 18% Control	18% Treated	18% Treated
P. No.	15.14	17.49	19.36
Unbleached brightness (% PV)	32.5	30.0	30.3
Unbleached pulp yield	56.67	56.50	56.60

b. Strength properties

Parameter	Unbleached pulp data 18% AA Control	18% AA Treated	18% AA Treated
Wetness (° SR)	17.5	17.5	17.0
Tensile Index (N m/g)	38.15	38.50	38.03
Breaking Length (m)	3893	3933	3874
Burst index (kN/g)	1.75	1.78	1.76
Tear index (mN m^2/g)	7.06	7.10	7.05
Double fold (No.)	8	8	9

Treatment of aspen with *Phanerochaete chrysosporium* at 39°C for 2-weeks, Inoculum level, 5 g/T wood. Cooking of both control and treated at 18% AA. Experiments performed 5/11/94-6/11/94.